SP-0027 Against the motion
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Abstract not received

SP-0028
For the motion
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At the time of Cobalt, Brachytherapy was competing with surgery, considered as a mini invasive treatment with a high local control.
At the time of conformal radiotherapy, BT was the optimal technique to deliver a high dose to the target while sparing the bone structures and salivary glands then reducing complications and xerostomia. But it was often considered as an operator dependent technique as surgery was.
Today, at the time of high tech Radiotherapy, BT is still competing with non invasive treatment by irradiation, IMRT or Stereotactic RT.
Nevertheless, BT maintains its specific advantages wich makes it the most conformal technique, delivering an accelerated and hyperfractionated technique of irradiation, then increasing the therapeutic ratio. The development of imaging for 3D dosimetry and Conformal BT, as well of the possibility to prescribe the dose rate and optimise the dose distribution improves the dose distribution and results of the technique.
The intraoperative placement of the catheters in the target mimics fiducials and improves the delineation of the target combined to the imagines and clinical exam during the procedure. This contributes, as well as the implantation inside the tissues to reduce the target volume with no ITV and a PTV equal to the CTV. The irradiation directly in the target also reduces the dose transmited to the bone and the salivary glands as well as the nominal dose.
Considering the treatment of oropharyngeal cancer, BT delivered as a boost after IMRT can be considered as the optimal combination of treatment, competitive with stereotactic techniques.
Last but not least, on an economic point of view, BT is less expensive than new high tech external beam techniques.
This justifies to intensify the teaching of this technique then offering to the patients a panel of skilled brachytherapists able to perform the procedure with quality assurance control.

SP-0029
Against the motion
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About one third of oropharyngeal carcinomas are diagnosed in early-stage disease, amendable to curative treatment with either radical surgery or primary radiotherapy (RT). However, two thirds of patients present with locally advanced disease (clinical stage III or IV) and have a less favorable prognosis. Over the last decades, the management of locally advanced HNC has evolved towards approaches that offer the possibility of organ preservation, such as chemoradiotherapy. Although the prognosis of patients treated with RT for locally advanced HNC is continually improving, loco regional failure remains a major concern, certainly for the HPV negative tumors. Locoregional recurrences are mainly located in the high-dose prescription regions, suggesting the need for even higher doses in those areas. However, dose escalation to an entire target volume is not possible due to normal tissue toxicity. Many studies have shown that we're on the limit of acceptable toxicity with our current treatment strategies. The term 'dose painting' implies non-uniformity within a target region, directing dose to sub regions of tumour to improve local control. Focusing a high-dose boost to a biological target volume, such as the hypermetabolic area on a PET scan or volumes defined on functional imaging like DW-MRI, could improve response rates. IMRT has the ability to deliver non-uniform dose distributions.
The use of this highly conformal external beam radiotherapy allows us to sculpt the dose around these sub volumes within tumor. Since studies have shown that both the primary tumor and the lymh nodes are important sites of failure, a radiotherapy technique which can target both is beneficial. Using simultaneous integrated boost techniques, this can be done without increasing overall treatment time and at the same time take into account both primary tumor and involved nodes. Moreover, concomitant administration of chemotherapy is feasible and often indicated in these advanced tumors. And lastly, with the use of sequential (functional) imaging we can adapt the treatment plan during the course of radiotherapy, based on the biological response of the tumor.
The advantages are in favour of the use of external beam radiotherapy for dose escalation in oropharyngeal carcinomas.
However, good selection tools are needed to define the patients whom might benefit from dose escalation. Both functional imaging and molecular features warrant further investigation. These studies are currently proceeding in order to define these subgroups.

POSTER DISCUSSION: 1: GEC-ESTRO

PD-0030
Dosimetric characteristics of a rigid shieldable MRI-compatible anorectal applicator for HDR brachytherapy (BT)
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Purpose/Objective: A resent study Appelt et al. *(Int J Radiat OncolBiol Phys, 2012)* demonstrated a significant dose-response relationship for tumour regression after preoperative chemo-radiotherapy for locally advanced rectal cancers.
BT boost in combination with EBRT is one feasible way of increasing the total tumour dose. To spare the non-involved parts of the rectal wall during BT, a shieldable applicator is desirable. Hansen et al. *(Med Phys, 2006)* demonstrated that physical shielding is preferable compared to sparing by increasing the distance using a multi channel applicator. While shieldable applicators are commonly used in brachytherapy, no shieldable MRI-compatible applicator is commercially available.
The purpose of this study was to describe dosimetric properties of a prototype shieldable MRI-compatible applicator and investigate the feasibility of performing dose calculations using a commercially available Treatment Planning System (TPS).
Materials and Methods: A semi-solid applicator made of polyoxymethylene (POM) is shown in Figure 1. The cavity allows placement of an MRI-visible 'dummy' shield during an MRI-procedure, while a high-Z shield (90° or 180°) can be applied during irradiation.

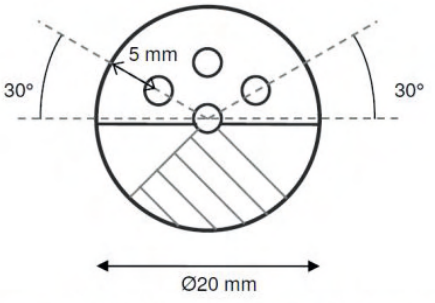

Figure 1: Cross section of the prototype MRI-compatible anorectal applicator. The upper half is solid with four possible positions for catheters, one central and three 5 mm from the applicator surface. The lower half is hollow allowing placement of either an MRI-visible 'dummy' shield during an MRI-procedure or high-Z shields (90° or 180°) during irradiation. As an example a 90° shield is shown.

Dose measurements were performed with an ^{192}Ir HDR-source (microSelectron, Nucletron, An Elekta Company) using the PFD^{3G} diode and BluePhantom (iba Dosimetry GmbH).
Immersing the applicator into water radial dose distributions were acquired for each 45°. Measurements were performed for the central catheter and for the applicator (with or without the shields) respectively and were compared with the radial dose distribution from the TPS Oncentra® Brachy 4.1 (Nucletron, An Elekta Company).
Results: The agreement of the measurements and the TPS for the central catheter was excellent at distances 0.5 mm to 40.0 mm from the applicator surface (relative error from -2.0 % to 1.4 %). At larger distances, the TPS increasingly underestimated the dose with an error of approx -5 % at a distance of 60 mm.
At clinical relevant distances (5 mm to 15 mm from the applicator surface) an under-dosage (2.1 % to 4.7 %) was found for the solid part of the applicator compared to the TPS estimations. Near the applicator surface the under-dosage was 10 %. At increasing distances the difference decreased eventually resulting in a small relative over-dosage far from the surface. General over-dosage behaviour was found for the hollow part. This was approx 8 % near the surface, and in the range of 3.9 % to 8.3 % at the clinical relevant distances.
Transmission factors (50 mm from the applicator) for the shields were 0.34 and 0.31, respectively and were easily incorporated into the TPS.
Conclusions: The dosimetric properties of the prototype applicator were found to be acceptable. In clinical practice a renormalisation of